ECS/EMD Configuration Change Request

1. Originator	2. Log Date:	3. CCR #:	4. Rev:	5. Tel:	6. Rm #:	7. Org.
Wenhsing Yang	**02/12/04**	**04-0102**	**—**	301-925-0483	3204C	DEV

8. CCR Title: Update PDS oracle database configuration on DIG06 for DAACs.

9. Originator Signature/Date	10. Class	11. Type:	12. Need Date: 02/26/04
Wenhsing Yang /s/ 2/6/04	**II**	**CCR**	

13. CCR Sponsor Signature/Date	14. Category of Change:	15. Priority: (If "Emergency" fill in Block 27).
Arthur Cohen /s/ 2/6/04	Other	Routine

16. Documentation/Drawings Impacted *(Review and submit checklist):*	17. Schedule Impact:	18. CI(s) Affected:
920-TDE-009,920-TDG-009,920-TDL-009,920-TDN-009,920-	N/A	DIPHW(PDS)

19. Release Affected by this Change:	20. Date due to Customer:	21. Estimated Cost:
6A	02/26/04	None - Under 100K

22. Source Reference: ☒**NCR (attach)** ☐**Action Item** ☐**Tech Ref.** ☐**GSFC** ☒**Other:**
Database configuration changes on DIG06 are required for PDS database performance tuning in DAACs (NCR 39179)

23. Problem: (use additional Sheets if necessary)
Database configuration changes on DIG06 are required for PDS database performance improvement in DAACs

24. Proposed Solution: (use additional sheets if necessary)
Database configuration changes on DIG06 are implemented in DAACs and documented in the baseline for PDS

25. Alternate Solution: (use additional sheets if necessary)
None

26. Consequences if Change(s) are not approved: (use additional sheets if necessary)
Database performance will not meet the required loads, and configuration changes on DIG06 are not documented in the baseline for PDS

27. Justification for Emergency (If Block 15 is "Emergency"):

28. Site(s) Affected: ☐EDF ☒PVC ☒VATC ☒EDC ☒ GSFC ☒LaRC ☒NSIDC ☐SMC ☐AK ☐JPL ☐EOC ☐ IDG Test Cell ☐Other

29. Board Comments:	30. Work Assigned To:	31. CCR Closed Date:

32. SCDV CCB Chair (Sign/Date):	Disposition: Approved App/Com. Disapproved Withdraw Fwd/ESDIS ERB Fwd/ECS
Byron Peters /s/ 02/19/04	
33. EDF CCB Chair (Sign/Date):	**Disposition:** Approved App/Com. Disapproved Withdraw Fwd/ESDIS ERB Fwd/ECS
34. ECS CCB Chair (Sign/Date):	**Disposition:** Approved App/Com. Disapproved Withdraw Fwd/ESDIS ERB Fwd/ESDIS

ADDITIONAL SHEET

CCR #: 04-0102 Rev: — Originator: Wenhsing Yang

Telephone: 301-925-0483 **Office:** 3204C

Title of Change: Update PDS oracle database configuration on DIG06 for DAACs

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ORACLE DATABASE STATISTICS COLLECTION AND THE ANALYSIS OF DATABASE PARAMETERS FOR PERFORMANCE TUNING

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(1) To collect the oracle pds database performance statistics :

The utlbstat and utlestat scripts are used to collect oracle instance statistics on DIG06 oracle servers. The DIG06 hosts are e0dig06 (LP DAAC), g0dig06 (GSFC DAAC), l0dig06 (LARC), n0dig06 (NSIDC), p0dig06 (PVC), and t1dpg06 (VATC).

The steps for collecting the oracle performance statistics are the followings:

Login as oracle on DIG06 host

cd /usr/ecs/OPS/COTS/oracle/admin/pds

Point to the pds instance by typing the line below

export ORACLE_SID=pds

Run the svrmgrl utility by typing svrmgrl, the "SVRMGR>" prompt will be displayed

Connect to the database by typing the "connect internal" at the SVRMGR> prompt

and the "Connected." will be displayed.

Start to collect the statistics by typing

@/usr/ecs/OPS/COTS/oracle/8.1.6/rdbms/admin/utlbstat

<This may take a few hours depending on the oracle transactions you are interested in.>
...

Stop the statistics collection by typing

@/usr/ecs/OPS/COTS/oracle/8.1.6/rdbms/admin/utlestat

Exit the svrmgrl session: at the SVRMGR> prompt by typing

exit

At the UNIX prompt to list the output fileby typing

ls -l report.txt

Rename the output file report.txt to a different name by typing

mv report.txt report.txt.<DAAC_name>_pds.<Time_stamp_YYYYMMDD_HHMM>

(2) The database parameters for performance tuning

Based upon the utlbstat/utlestat data generated at DAACs and EDF,
three parameters need to be adjusted to values below for improving the
oracle instance performance at all DAACs:

db_block_buffers 6400
log_buffer 65536
shared_pool_size 54000000

The log file size needs to be increased to reduce the number of the
archived log files. The increasing from the current 5M (GSFC) to
15M or 30M or 45M depends on the frequency and number of log files
created by the log archive process. Currently LARC and NSIDC
do not need to increase their log file size. However the statistics
need to be collected and reassessed.

The alert_pds.log files from LP DAAC, GSFC, LARC and NSIDC were analyzed.
The log switches (transactions) are not many in LARC and NSIDC compared with
those in LP DAAC and GSFC. Since the patch of the modified
pds_completion_pkg
stored proc, the LP DAAC and GSFC confirmed the original problem was resolved.
However
the log_buffer (32768) and log files (5M) in GSFC are smaller than
those in LP DAAC,
which can be increased to improve the log performance and reduce the
number of log archiving. Oracle recommends about one log switch per
hour.
The current configuration in LP DAAC is as follows,
 log_buffer = 65536 (64K) and
 4 groups of log files with 30M each.
The frequency of log archiving in
LP DAAC is in the recommended range.
The log files info in LP DAAC is listed here as reference:

```
    MAXLOGFILES 8
    MAXLOGMEMBERS 3
    MAXDATAFILES 50
    MAXINSTANCES 4
    MAXLOGHISTORY 6084
LOGFILE
  GROUP 1 (
    '/or1/data/pds/relog1apds.log',
    '/or2/data/pds/relog1bpds.log'
  ) SIZE 30M,
  GROUP 2 (
    '/or3/data/pds/relog2apds.log',
    '/or2/data/pds/relog2bpds.log'
  ) SIZE 30M,
  GROUP 3 (
    '/or3/data/pds/relog3apds.log',
    '/or1/data/pds/relog3bpds.log'
  ) SIZE 30M,
  GROUP 4 (
    '/or1/data/pds/relog4apds.log',
    '/or2/data/pds/relog4bpds.log'
  ) SIZE 30M
```

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INSTRUCTIONS FOR GSFC TO CHANGE THE PARAMETERS AND CHANGE/ADD LOGFILE
GROUPS

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Based on the analysis of the alert_pds.log in GSFC, the log switch frequency
is ranging from 1 to 6 per hour with logfile size 5M each.
The logfile needs to be resized as 30M at least.

In the maintenance window when all PDS applications using oracle are
shutdown:

(1) To change the database parameters:

Login as oracle by "su -l oracle"

Point to the pds instance by typing
export ORACLE_SID=pds

cd /usr/ecs/OPS/COTS/oracle/admin/pds/pfile

Modify the initpds.ora file by using vi editor

Change the lines containing the 3 parameters below:

db_block_buffers
log_buffer
shared_pool_size

to the followings,

```
# Feb 2004 increase db_block_buffers        to 6400
db_block_buffers  = 6400
# Feb 2004 increase log_buffer to 65536 (64K)
 log_buffer = 65536
 # Feb 2004 increase shared_pool_size to 54000000 (54M)
 shared_pool_size = 54000000
```

Save the file and exit the editor

Run the svrmgrl utility by typing svrmgrl, and see the SVRMGR> prompt.

Restart the pds instance by typing the commands below at the SVRMGR> prompt:

```
connect internal
shutdown
startup
```

(2) Add/Change logfile groups to 3 groups with 30M each:

```
# Add group 3

ALTER DATABASE pds
  ADD LOGFILE
    group 3 ('/or3/data/pds/relog3apds.log',
                '/or1/data/pds/relog3bpds.log')  size 30M;

# Change group 1

select * from v$log;
```

Make sure the group 1 is INACTIVE before it can be dropped.
If it's not INACTIVE, force it to switch by the command below,

```
alter system switch logfile;
```

Verify the group 1 is INACTIVE by the command below,

```
select * from v$log;
```

Drop the group 1 by command below

```
ALTER DATABASE pds
  DROP LOGFILE
    group 1;
```

Since the 'DROP LOGFILE' command does not remove the log files,
need to login as oracle in another window, and remove the log files
using the unix commands below,

```
rm /or1/data/pds/relog1apds.log
rm /or2/data/pds/relog1bpds.log
```

Add logfiles with new size by the command below,

```
ALTER DATABASE pds
  ADD LOGFILE
    group 1 ('/or1/data/pds/relog1apds.log',
             '/or2/data/pds/relog1bpds.log')  size 30M;
```

Check the status of the logs to verify what had been done by

```
select * from v$log;
```

Change group 2

Make sure the group 2 is INACTIVE before it can be dropped.
If it's not INACTIVE, force it to switch by the command below

```
alter system switch logfile;
```

Display the status of the logs by the command

```
select * from v$log;
```

Drop the group 2 by command below

```
ALTER DATABASE pds
  DROP LOGFILE
    group 2;
```

Since the 'DROP LOGFILE' command does not remove the log files,
need to login as oracle in another window, and remove the log files
using the unix commands below,

```
rm  /or3/data/pds/relog2apds.log
rm  /or2/data/pds/relog2bpds.log
```

Add logfiles with new size by the command below,

```
ALTER DATABASE pds
  ADD LOGFILE
    group 2 ('/or3/data/pds/relog2apds.log',
             '/or2/data/pds/relog2bpds.log')  size 30M;
```

Check the status of the logs to verify what had been done by

```
select * from v$log;
select * from v$logfile order by group#;
```

To exit the svrmgrl type 'exit' at the SVRMGR> prompt.

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INSTRUCTIONS TO CHANGE THE ORACLE DATABASE PARAMETERS
FOR OTHER DAAC (LP, LARC, NSIDC, PVC, VATC)

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In the maintenance window when all PDS applications using oracle are shutdown:

(1) To change the database parameters:

Login as oracle by "su -l oracle"

Point to the pds instance by typing
export ORACLE_SID=pds

cd /usr/ecs/OPS/COTS/oracle/admin/pds/pfile

Modify the initpds.ora file by using vi editor

Change the lines containing the 3 parameters below:

db_block_buffers
log_buffer
shared_pool_size

to the followings,

# Feb 2004 increase db_block_buffers to 6400
db_block_buffers = 6400
# Feb 2004 increase log_buffer to 65536 (64K)
log_buffer = 65536
# Feb 2004 increase shared_pool_size to 54000000 (54M)
shared_pool_size = 54000000

Save the file and exit the editor

Run the svrmgrl utility by typing svrmgrl, and see the SVRMGR> prompt.

Restart the pds instance by typing the commands below at the SVRMGR> prompt:

connect internal
shutdown
startup

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